FEMA

PRODUCTION & TECHNICAL SERVICES
STATEMENT OF WORK

STARR
CONTRACT NO. HSFEHQ-09-D-0370
TASK ORDER NO. HSFE01-11-J-0008

The Risk MAP Project described in this Statement of Work (SOW) shall be completed in accordance with Contract No. HSFEHQ-09-D-0370 dated March 4, 2009, between STARR and the Federal Emergency Management Agency (FEMA).

Revise Sched + Data to 10/31

Contents

SECTION 1—OBJECTIVE AND SCOPE

The objective of the Risk MAP Project documented in this SOW is to develop and / or support a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report, for York and Cumberland Counties, ME. All processes and deliverables will be completed in accordance to the Federal Emergency Management Agency's (FEMA's) Guidelines and Specifications (G&S) for Flood Hazard Mapping Partners and effective Procedure Memoranda (PMs). These documents can be found on FEMA's website at http://www.fema.gov/plan/prevent/fhm/gs_main.shtm and http://www.fema.gov/plan/prevent/fhm/gs_memos.shtm. PMs are used to implement updates to the G&S, to provide additional clarification of procedures that are not documented in published guidance documents, and to establish procedures and policies. Should a PM require a scope change, STARR should work through the change process by submitting Change Request Form (CR) to the appropriate Regional office. *Any interpretations made to the G&S or PMs must be approved by the Region prior to implementation.*

The DFIRM and FIS report will be produced in the North American Vertical Datum of 1988 (NAVD88) for the study areas listed in the table below.

In addition, the Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in Table 1.1, Study Area Statistics.

Table 1.1 – Study Area Statistics

County	Shoreline Miles affected by new coastal analysis	DFIRMs affected by new coastal analysis	Communities affected by new coastal analysis	Total Panels/Total Communities
Cumberland County	*372*	*110*	*13*	315/28
York County	*131*	*75*	*10*	255/29

This Risk MAP Project will be completed by STARR.

Assumptions:

- Although several activities related to post-preliminary processing (including Community Coordination Meetings) were performed under previous efforts, all post preliminary activities associated with a Risk MAP *project* will be required for this county. These proposed activities are described in greater detail below.
- Additional data has been provided to FEMA in response to coastal study updates performed under Map Modernization. STARR will incorporate this additional data wherever available and apply that data to the extent possible in remaining study areas. These proposed activities are described in greater detail below.
- No new topographic *data (LiDAR) will* be acquired as part of this activity.

- *Field reconnaissance activities will be performed as part of this activity and coastal analysis will be developed accordingly.*
- All project correspondence will be submitted for approval to the Region prior to issuance. This applies to both Regional and HQ signed correspondence *until such time as Region decides to suspend this review. Regional review will be done after completion of the STARR letter review process. All correspondence sent to FEMA for review shall be accompanied by a completed STARR Review Log and associated checklists. The Region shall be given no less than two weeks for its reviews.*
- Engineering judgment applied to these projects to resolve data discrepancy or tie-ins will be reviewed and approved by the Region.
- *Bi-weekly engineering review meetings will be held at the FEMA Region I office.*

STARR, on behalf of FEMA, will notify all applicable parties of all meetings with community officials, and other relevant meetings, at least three weeks prior to the meeting (with as much notice as possible). FEMA *and* its contractor *will* attend the community meetings. *All meeting dates must be coordinated with FEMA and the State prior to scheduling actual dates.*

STARR will maintain an archive of all data submitted. (All supporting data must be retained for three years from the date a funding recipient submits its final expenditure report to FEMA.)

STARR is responsible for the implementation of an independent Quality Assurance/Quality Control (QA/QC) plan for all assigned activities. STARR will submit a Summary Report that describes and provides the results of all automated or manual QA/QC review steps. The report should include the process for all assigned activities.

STARR will submit Risk MAP products to FEMA *after internal STARR QC comments have been satisfied for FEMA review at least two weeks prior to public issuance.*

Metadata is required for all activities.

DFIRM-related tasks require a passing QC Report from FEMA's National DFIRM database auto-validation tool for Quality Review (QR) #1, #2, and #5 as described in PM 42. Training materials for this step are available on the Mapping Information Platform (MIP) at MIP User Care>Training Materials.

FEMA will provide download/upload capability for data submittals through the MIP located at https://hazards.fema.gov. As each activity is completed, the data must be submitted to the MIP.

STARR will respond to any comments generated as a result of the mandatory quality control checks by the Production and Technical Services contractor (PTS) as described in PM 42.

In cooperation with the FEMA Project Officer, a Project Management Team (PMT) will be established by STARR consisting of representatives from *the Region, STARR, and* the Regional *Service* Center (RSC). *STARR* will be responsible for *communicating* project activities with the State *NFIP and other appropriate parties on behalf of the PMT.* The FEMA Region will be provided with documentation identifying the established PMT *within 30 days of contract issuance. Documentation will include contact information for the PMT, the State NFIP and other appropriate parties, a Communication*

Diagram/Project Organization Chart, and the project schedule to include incorporation of revisions determined during the kick-off meeting.

Earned Value Data Entry: The MIP Workflow is designed to track the Earned Value of mapping projects. This information is automatically calculated by the MIP, using the Actual cost and schedule of work performed, or "actuals" and comparing them to the expected cost and schedule of work performed, or "baseline".

Once the FEMA Regional office has funded a project, *the* FEMA Region I RPML will complete the "Obligate Project Funds" screen in the MIP *in coordination with STARR.* This step establishes the baseline for the project in the MIP, using the cost and schedule information for each task as outlined in this document and agreed to at the completion of the *contract issuance*.

The MIP study workflow allows STARR to manage the status of these projects at a task level. The cost and schedule information, updated by STARR for each contracted task, is compared to the baseline established for those tasks. This information is rolled up to a project level and monitored by the FEMA Region to assess progress and Earned Value.

Earned Value data entry involves updating cost, schedule and performance (physical percent complete) in the MIP by STARR.

STARR will contact the *Region / HQ / RSC* lead to obtain the guidance document Risk MAP Products in the MIP which explains how Non-Regulatory Products will be submitted through the MIP. The guidance also explains how performance will be tracked for Non-Regulatory Products.

Once the baseline has been established in the MIP, STARR will input the performance and actual cost to date for each contracted task for each project. This must be completed at a minimum by every thirty days and at the completion of the task. When a task is completed, including all QA/QC activities in this MAS plus the Quality Control Reviews established in PM 42, STARR will enter 100% complete, enter the actual completion cost, and the actual completion date within the Manage Data Development, Manage Preliminary Map Production, or Manage Post Preliminary Processing, as applicable. The "Manage" tasks will be open and accepting updates for up to 90 days after the completion of the last producer task in each module. The MIP will also be populated with appropriate leverage information regarding who paid for the data provided and the amount of data used by the Risk MAP Project. STARR will maintain a Schedule Performance Index (SPI) and Cost Performance Index (CPI) of at least 0.92. CRs must be submitted in a timely manner as required.

STARR understands that the Project Officer, as needed, may request additional information on status on an ad hoc basis. Status reports presenting work completed to date, % complete to date and cost spend to date will be presented to the Region and State partners on a monthly basis by the middle of each month (the cost information will not be sent to States). Bi-weekly status meetings will be held at the FEMA Region I office with *participation to include the FEMA Project Manager, the STARR Task Order Manager, and the STARR Project Manager.*

Program Management

Responsible Mapping Partner: STARR

Scope: Program Management is the active process of planning, organizing, and managing resources toward the successful accomplishment of pre-defined project goals and objectives. STARR will coordinate with the FEMA Regional Office with respect to Project Management activities and technical mapping activities. A project kick-off meeting will be planned and held at the FEMA Regional Office within two weeks of task order award or written Notice to Proceed. Representatives including STARR Task Order Managers and any relevant subcontractors will attend.

Program management includes the following activity by the STARR Task Order Manager:

- *Overall coordination with FEMA and the STARR project team;*
- *Coordinate bi-weekly Production Status meetings and corresponding meeting notes;*
- *Follow up on action items for all studies;*
- *Coordinate and review written correspondences (e.g., letters, memos, and reports) before providing drafts to the Region;*
- *Coordinate technical meetings as necessary and prepare and distribute corresponding meeting notes;*
- *Participate in weekly project meetings with the PMs;*
- *Monitor continuity/consistency amongst studies;*
- *Review and provide Progress Reports to the Region and States;*
- *Assist RPML with quarterly JPR meeting presentation;*
- *Assist with preparation and review of Change Requests;*
- *Assist PMs in coordinating outreach meetings and participate when necessary;*
- *Review invoices; and*
- *Track SPI.*

Standards: All Program Management work (IBR, Change Requests, EVMS and Invoicing) will be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables:

- Monthly Earned Value data reporting through the MIP with variance explanations to support management of technical mapping activities within specified timeframe, for both Regulatory and Non-Regulatory Products;
- Management of SPI/CPI performance for an organization; and
- Management of adherence to scope of work and quality of work for an organization.

Project Risk Identification and Mitigation

Responsible Mapping Partner: STARR

Threats to the planned completion of a project may come from various sources. Risks should be identified during the planning phase and monitored throughout the project so that potential impact can be assessed and solution strategies developed and implemented as needed.

Table 1.2 – Project Risk Identification

Project Risk	Potential Impact	Solution Strategy
Appeals filed by the communities affected by the new coastal analysis	Delay in study becoming effective	The flood study review meeting with the communities will help community officials understand the STARR's approach on the new coastal analysis and will help form a dialogue between the STARR engineers and community officials.

Perform Discovery

Not applicable for this task order.

Perform Project Outreach

FEMA's outreach program includes the following meetings (on average): Discovery Meeting, Flood Risk Review Meeting, Resilience Meeting, and Final CCO Meeting/Public Open House.

Scope: Outreach for this activity will consist of the three (3) *types of* meetings discussed below. Discovery meetings are not anticipated for this activity. Additionally, STARR assumes that its staff will not be in attendance for Resilience Meetings.

Three outreach meetings

The York and Cumberland County Risk MAP studies will include will include four (4) in-person opportunities for each county (2 of each type described below per county) to build risk awareness at the local level. *STARR outreach activities include but are not necessarily limited to the following:*

- *Coordinate with the communities on multiple occasions to verify current contact names, addresses, and specific preferences;*
- *Prepare and distribute invitation letters, to include Certified Mail as appropriate;*
- *Develop meeting presentations to include coordination with FEMA and the State;*
- *Conduct dry-run presentations;*
- *Attend/conduct meetings;*
- *Prepare and distribute meeting documentation, including formal minutes;*
- *Follow-up with communities, State NFIP, and stakeholders for any questions that may come up.*

- **Flood Risk Review Meeting.** This meeting will serve two purposes. First it will provide communities with engineering data and drafts of flood risk products as they are developed, collect feedback, and revise as needed. Second, it will help build the communities' confidence in the Risk MAP Products by showing how the Products may be used to make communities more resilient by prioritizing mitigation actions, assistance understanding risk data and improving mitigation plans, especially risk assessments and mitigation strategies. STARR will prepare flood hazard work maps for presentation at this meeting. *Communities will be required to sign up for 1 hour time slots to meet one-on-one with STARR and FEMA to review the work maps.* All work

map products will be provided to *the* FEMA Regional Office for review *no less than 2 weeks in advance of this meeting.*

- **Resilience Meeting.** The meeting will provide a comprehensive view of mitigation planning, mitigation options available to communities, sharing of success stories, and potential mitigation actions that communities can initiate. *This is a FEMA activity. STARR will include this meeting in the schedule, but will not provide any support or attend the meeting.*
- **Final CCO Meeting(s)/Open House.** If regulatory products are included in a Risk MAP project, this meeting will provide local officials an opportunity to verify the appropriate revisions have been made to previously demonstrated information, take ownership of the products, and deliver the results of the project to the local citizenry. Risk MAP production team support will be provided to support the local officials, or deliver the messages, if the local officials are unwilling. Also, communities will be encouraged to identify short- and long-term efforts to progress towards increasing flood risk awareness and management.

To facilitate information sharing and a continuing dialogue between the PMT and the community, STARR will provide the State of Maine with *monthly* status reports outlining the current project status, key accomplishments to date, identified risks, if any and next steps. *Monthly status reports will follow the established format currently being utilized by STARR. Any changes in the format will be brought to the Region for approval prior to implementation.*

The overarching goal is to create a climate of understanding and ownership of the mapping process at the State and local levels. Well-planned and executed community engagement can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misunderstanding, or misinformation. These outreach activities also can assist FEMA, STARR, and other members of the PMT in responding to congressional inquiries.

STARR will work with the Regional Office during the initiation of this activity to develop the Project Communications Plan to support the implementation of the mapping project. The Regional Office will have access to many customizable outreach tools that have been developed for this process to support each touch point that the PMT has with the community. Volume 1 of the G&S provides specific outreach goals that can be considered

All communication with local governments *(and tribes, if applicable)* will be done in accordance with 44 CFR Part 66.

Standards: All outreach activities will be performed in accordance with the standards specified in Section 5 - Standards. Additionally, STARR shall conduct all meetings in accordance with the document Risk MAP Meetings Guidance.

Deliverables: STARR will deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 – Schedule and include within the TSDN:

- A report detailing outreach and coordination activities
- Backup or supplemental information used in writing this report
- Meeting minutes; and
- Monthly status reports (one per state)
- *Memos documenting Regional clarification of the G&S, approval or resolution of proposed engineering judgments to be applied, or other project resolutions.*

Perform Field Survey

Responsible Mapping Partner: STARR

Scope: To support coastal analysis and mapping of the above-referenced study areas, STARR shall perform field reconnaissance activities and field surveys. These activities will provide site specific information and detailed topographic data for coastal analysis. Provided below is a description of STARR's approach to field survey.

Field Reconnaissance

The first step to developing and implementing an effective field reconnaissance program is to review available archive data. This will include obtaining and analyzing data from the following sources:

- *Effective Flood Insurance Rate Maps (FIRMs) and Flood Insurance Studies (FISs) for the study areas;*
- *Available Letters of Map Change (LOMC);*
- *Post event surveys and investigations for major storms that have impacted the study area;*
- *Available aerial photographs (current and from the time of the previous FIS, if available);*
- *Available LIDAR and other digital topographic data;*
- *Archive flood study data, as available;*
- *Shoreline Change Maps; and*
- *Geographic Information System data, such as population density and infrastructure*

STARR assumes that this data will be available from local and state government agencies including Maine Geographic Information System (MEGIS), FEMA, other Federal Agencies, and private companies. STARR will contact these entities to determine availability as part of this activity. In the event that data is not available, STARR will provide FEMA Region I with recommendations for resolution. The information is likely to be in both digital and hardcopy formats. Information will need to be checked for accuracy to confirm it meets current standards.

The available archive information will be analyzed and significant changes in shoreline configuration, infrastructure and development will be noted. The quality of available archive topographic data will be assessed. This will help to focus the field activities on the areas with significant changes from the previous FIS.

Field reconnaissance will be completed by STARR staff. STARR staff will have a photo ID and a FEMA signed "carry" letter with them at all times while in the field. Prior to any field work, STARR will notify the appropriate authorities of the dates and times of the field work. If private property access is needed, STARR will attempt to obtain approval to access the sites. If access is not provided, STARR will inform FEMA Region I and provide recommendations for resolution.

The reconnaissance study will include a visual inspection of the shoreline for 8 communities, 5 in Cumberland County and 3 in York County, in conjunction with the field transects listed in Table 1.4. Field reconnaissance LOEs are based on a combination of walking and boat days. The total anticipated walking days and boat days for each county is listed in Table 1.3 below. The purpose of inspection will be to confirm changes in physical conditions from the previous FIS, determine the condition of shore protection structures and natural barriers, and evaluate potential representative transect locations. The limits of the visual inspection will be the V-Zone extents from the previous FIS. Geo-referenced photographs will be used to document the findings of the inspection. The reconnaissance study will be

completed on foot for coastal beaches and by boat for inner-harbor areas and inaccessible coastal areas. Inaccessible coastal areas include salt marshes and rocky shorelines where travel by foot would be inefficient. The following table outlines the assumed level of effort for the reconnaissance field work.

Table 1.3 provides the level of effort required for the field reconnaissance task.

Table 1.3 – Field Reconnaissance Level of Effort

County (State)	Shoreline Miles	Field Reconnaissance (Walking Days)	Field Reconnaissance (Boat Days)
Cumberland (ME)	128	12	6
York (ME)	40	6	2

Transect Survey

STARR will perform transect surveys using GPS receivers in RTK mode in support of the coastal analysis. STARR will collect ground survey points in the project area using Topcon Hiper GD GPS receivers in static and/or real time kinematic (RTK) mode. Horizontal coordinates will be tied into the State Plane Coordinate System for each state (NAD 83) and vertical control will be tied into NAVD 88. STARR will perform survey work and process survey data in accordance with FEMA's G&S.

Field survey activities will focus on collecting information which may not be represented in the LiDAR data set. Field survey efforts under this task may include: obtaining physical dimensions of coastal engineering structures (i.e. seawalls, revetments, etc.) and/or collecting elevation data below 0.0 Feet NAVD 88. This information will be collected at the proposed location of coastal transects. The precise level of field survey effort cannot be determined until after a review of the LiDAR dataset. However, for the purposes of this proposal, we have assumed that the field survey efforts will be required to confirm conditions at the number of coastal transects indicated in Table 1.4 Coastal Transect Survey per County. Transect assumptions were based on a desktop review of effective transect layouts.

Table 1.4 – Coastal Transect Surveys per County

Communities	Proposed Field Survey Communities	Proposed # of Coastal Transect Surveys
Cumberland (ME)	5	28
York (ME)	3	55

Final locations of transect surveys will be determined based on review of STARR's proposed transect layouts with the FEMA Region I Project Manager.

Standards: All Field Survey work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: STARR shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the National Flood Insurance Program (NFIP) Metadata Profiles Specifications must accompany the G&S compliant digital data. Additionally, the Technical Support Data Notebook (TSDN) format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. Where paper documentation is required by state law for professional certifications, STARR may submit the paper in addition to a scanned version of the paper for the digital record.

- *Maps and drawings that provide the detailed survey results;*
- *Survey notebook containing cross section and structure data;*
- *Documentation of the horizontal and vertical datum;*
- *Digital versions of draft text for inclusion in the FIS report;*
- *Digital survey data consistent with the DCS as described in the G&S, and*
- *A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan.*

Develop Topographic Data

Not applicable for this study. STARR will utilize available topographic data acquired during Map Modernization activities for York and Cumberland Counties, ME as shown in Table 1.5.

Table 1.5 – Summary of Topographic Data

New/Existing	*Study Area*	*Accuracy & Year Acquired*	*Source/ Data Vendor*	*Contact Information*	*Use Restrictions*
Existing	Coastal Areas of Cumberland and York counties	2-ft contour interval/November 2006 LiDAR mission	FEMA/CDM and Sanborn Mapping	FEMA DHS	n/a

Perform Independent QA/QC: Topographic Data

Not applicable for this study.

Acquire Base Map

Responsible Mapping Partner: STARR

Scope: Base Map Acquisition consists of obtaining the digital base map for the project and as necessary, preparing the base map for use. STARR anticipates updated base map acquisition for York and Cumberland Counties, ME will include:

- Aerial Imagery (MEGIS Orthoimagery flown between 2001-2009), *to include updated town boundary and road centerlines;*
- Road Labels (October 2008 E911 Roads from Maine Office of GIS); and
- Town Boundary (MEGIS April 2010 update).

STARR will provide the digital base map.

Standards: All Base Map Acquisition work will be performed in accordance with the standards specified in Section 5 - Standards. The DCS must be met for this deliverable to be acceptable.

Requirements:

- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge.
- Review and supplement the content of the acquired base map to comply with the requirements of the G&S.
- For the base map components that have a mandatory data structure, convert the base map data to the format required in the G&S.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.

In addition, STARR will address all concerns or questions regarding the base map that are raised during the Independent QC review during the PTS's Validate Content Submission Process.

Deliverables: In accordance with the G&S Volume 1 and Appendices K, L, N and O, STARR will make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the FEMA NFIP Metadata Profile for Base Map Datasets, must accompany the uploaded digital data. STARR is responsible for confirming and/or obtaining any revised or updated guidance or Base Map profile specifications from the Region or RSC lead. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- Metadata file complying with the NFIP Metadata Profiles Specifications;
- Digital base map files that comply with the G&S requirements;
- Written certification that the digital data meet the minimum standards and specifications;
- Digital versions of draft text for inclusion in the FIS report;
- Documentation that FEMA can use the digital base map;
- Documentation of the Horizontal and Vertical Datums;
- Additional Base Map acquisition correspondence; and
- Updates to the National Digital Orthophoto Program (NDOP) project tracking at http://www.ndop.gov/ (This is required for new data collection only.)

Perform Independent QA/QC: Base Map

Responsible Mapping Partner: STARR

Scope: STARR will perform an impartial review of the base map acquired to ensure it includes data consistent with FEMA standards and sufficient to include on the DFIRM. Any needed edits should be made to the product to comply with FEMA standards.

STARR will be responsible for addressing *any and all comments* resulting from independent QC of the Base Map, including re-submittal of deliverables as needed to pass technical review.

Standards: All Independent QA/QC work will be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, STARR will make the following products available to FEMA by uploading the digital data to the MIP. STARR will verify that the data was submitted under the applicable HUC-8 folders. STARR also will confirm the updates to the National Digital Orthophoto Program (NDOP) website under project tracking, which is required for new data collection only. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- If the data is changed during review, then updated deliverables from previous tasks will be submitted at this time.

Perform Coastal Analysis

Responsible Mapping Partner: STARR

Scope: During the Map Modernization activities for York and Cumberland Counties, ME, the coastal areas in the communities of Scarborough, Cape Elizabeth, South Portland, Portland, Cumberland and Harpswell in Cumberland County and Kittery, Ogunquit, Kennebunk, Kennebunkport, Biddeford and Old Orchard Beach in York County were restudied. In response to these updated studies, several communities submitted additional data contesting the new BFEs in the form of appeals. This additional data was largely based on two dimensional hydrodynamic models using STWAVE.

In order to more adequately identify the coastal flood hazards in York and Cumberland Counties, STARR will execute a two-tiered approach. First, STARR will utilize the additional modeling data submitted *through appeals* during the Map Modernization post preliminary period by the communities. Second, STARR will run additional STWAVE models to determine starting wave conditions for the areas not included in previous submittals.

The results of the STWAVE modeling approaches will then be applied to coastal transects previously developed under the Map Modernization update. The resulting overland wave propagation and wave runup analysis will be used to revise the coastal flood hazard mapping for the aforementioned communities. In performing coastal flood hazard analysis for the aforementioned study areas, STARR will also identify the Limit of Moderate Wave Action (LiMWA).

Specifics of this proposed technical *approach* are provide in greater *detail* below, *to include evaluation of the communities of Saco, Wells, and York in York County and Brunswick, Falmouth, Freeport, Long Island, and Yarmouth in Cumberland County using a detailed coastal flood hazard study.*

Wave Modeling

In order to define appropriate deepwater significant wave height conditions for use in detailed coastal flood hazard analysis, STARR recommends utilizing a 2-dimensional wave transformation model. STARR proposes to use the steady-state spectral wave model (STWAVE) developed by the U.S. Army Corps of Engineers (2001). STWAVE simulates depth-induced wave refraction and shoaling, depth- and steepness-induced wave breaking, diffraction, wind-wave growth, and wave-wave interaction and whitecapping. These processes interact to redistribute and dissipate wave energy in a growing wave field.

Grid Development

STWAVE uses a rectilinear grid with positive numbers representing the average depth in the ocean grid cells and land cells are marked with a constant negative value. STARR proposes to utilize bathymetric information available from the National Oceanic and Atmospheric Administration's National Geophysical Data Center's Geophysical Data System (GEODAS). Bathymetric survey data is freely available and accessible at GEODAS http://www.ngdc.noaa.gov/mgg/geodas/geodas.html. All GEODAS bathymetric datasets will be combined to the common datum of NAVD 88, and subsequently merged with the masspoints from the November 2006 LiDAR mission flown for York and Cumberland counties, which are also in NAVD 88. The 1-percent-annual-chance storm surge used in the 2007 detailed coastal flood hazard analysis will then be added to the combined bathymetric and topographic data set to obtain a shifted shoreline *and depths* for developing the model grid. The shifted dataset will allow for accurate representation of the average value near the shoreline. *The stillwater elevations (SWELs) from the 2007 analysis will be compared with SWELs from the 2010 STARR updated versions at the boundaries of the study areas. Tie-ins at the boundaries will be finalized in a work map meeting with the Region. Additionally, STARR will coordinate with ongoing studies occurring in adjacent areas (e.g. New Hampshire coast line) to resolve tie ins.*

STWAVE is limited as to the total number of grid cells, so to transform the available deepwater wave conditions, it will be necessary to utilize a series of nested grids to develop the wave information necessary for detailed coastal flood hazard analyzes. A large offshore grid will be developed covering the entire span of Cumberland and York counties. The nested grids will be used to identify the wave conditions in each of the communities that have not submitted new analysis. These include: Kittery, Ogunquit, and Old Orchard Beach in York County; and Chebeague Island, Cumberland, and Scarborough in Cumberland County. These areas can be covered in three nested grids as shown in Figure 1. The first will extend from Kittery in the south to Ogunquit in the north, the second will extend from Old Orchard Beach through Scarborough, and the final will include Chebeague Island and Cumberland.

The existing three grids either already include the redelineated communities, or can be extended into those communities. One additional grid is included a way to split the communities of Brunswick, Chebeague Island, Cumberland, Falmouth, Freeport, Long Island, and Yarmouth.

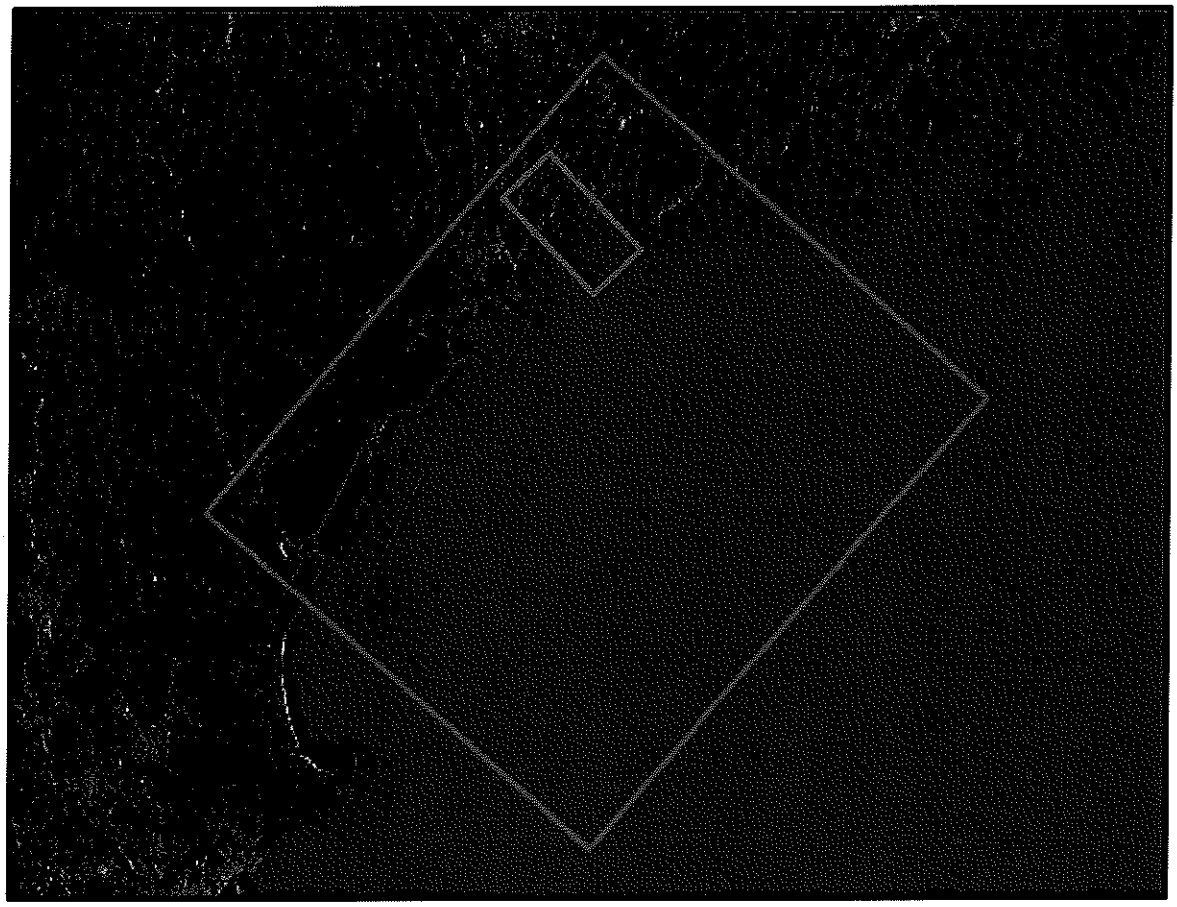

Figure 1. Outlines of potential model grids showing nesting

Boundary Conditions

The boundary conditions for STWAVE consist of both 2-dimensional wave spectrum, and wind speed. The two-dimensional wave spectrum will come from the U.S. Army Corps of Engineers Wave Information Study (WIS). The Atlantic WIS is a 20-year hindcast of wave climatology and is available in a gridded format as shown in Figure 2 from the WIS website http://www.frf.usace.army.mil/wis2010/wis.shtml. The hindcasts along the shore of York and Cumberland counties will be collected and analyzed to identify unique energy differences. If there are unique energy differences, STARR will inform the FEMA Senior Engineer as to the spectral shifts and the need to take an average of the different hindcasts. If there are no unique differences, then STARR will take one site representative of the central portion of the offshore boundary of the model domain. While the hindcasts are readily available as time series bulk parameters, STARR will contact the U.S. Army Corps of Engineers for the 2-dimensional wave spectrum, which is available upon request.

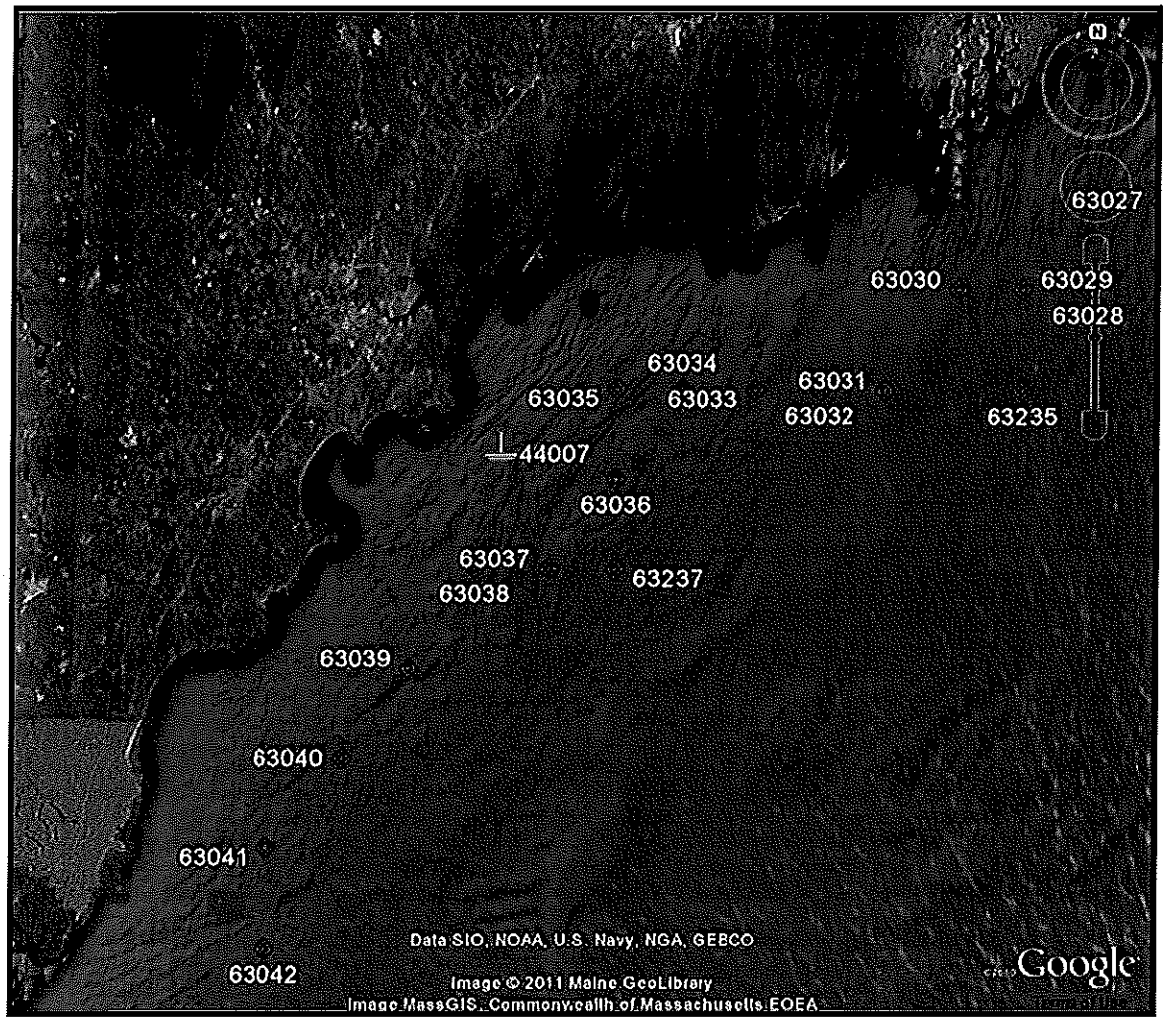

Figure 2. Atlantic WIS stations available along York and Cumberland Counties

Wind speed is also a term that can be applied to the model. The current version of STWAVE only accepts a single value of wind speed applied over the entire model domain. STARR will obtain wind data sets from locally available airports, i.e. Pease International Tradeport in Portsmouth, New Hampshire; Portland International Jetport in Portland, ME; and *Naval Air Station Brunswick (NAS Brunswick)* in Brunswick, ME.

Model Execution

At least two model simulations will be executed as a part of this effort. The first will be done to validate the model domain. A storm will be selected from within the hindcast record to evaluate the appropriate orientation of the grid. Model validation will occur through the comparison of the hindcast record against the STWAVE simulated wave height at a point. Inadequate orientation of the offshore grid will show through lower wave heights at the point within the model domain.

The second set of simulations will occur to define the 1-percent-chance-annual wave event. Utilizing the Atlantic WIS hindcast, an extremal analysis will be performed on the 20-year data set to obtain the 1-percent-chance-annual wave event. Once the 1-percent-chance-annual wave event is identified, the hindcast record will be searched to find an event of similar magnitude. Once this event is identified, the 2-dimensional wave spectrum will be requested from the U.S. Army Corps of Engineers, and this information will be applied as the boundary condition. If an event similar in magnitude to the 1-percent-chance-annual event is not in the hindcast record, then the top 20 events will be ranked, and the 2-dimensional wave spectra will be obtained from the U.S. Army Corps of Engineers. The wave spectra will be evaluated for unique shapes and several will be selected with discussions with the FEMA Senior Engineer and applied as boundary conditions for model sensitivity. A process to make the total energy in the wave spectrum match the total energy associated with the 1-percent-chance-annual significant wave will then be implemented. The results from either of these two approaches will be used to define the input conditions for the detailed coastal flood hazard analysis.

Detailed Coastal Flood Hazard Analysis

Coastal transects subject to new detailed coastal flood hazard analysis (120 in total) will be updated with the results from the 1-percent-chance-annual wave event simulation. The input conditions used in mapping will come from outside of the breaking zone as identified by the model result. Since the new starting wave conditions will impact wave setup, wave setup will be re-calculated at each transect and applied to obtain the total water level (combination of 1-percent-chance-annual water level and wave setup). The STWAVE model results in the significant wave height, which is the input condition for CHAMP for usage in WHAFIS and Runup 2.0. In addition, the wave height can be used to define the appropriate value for usage in Runup methodologies (i.e., TAW and SPM) outside of CHAMP. *Runup guidance for which method to choose developed by the Coastal IPT workgroup will be utilized.* In addition, primary frontal dunes will be identified if appropriate at each transect. STARR will utilize an approach to identify the landward toe of the primary frontal dune in agreement with the FEMA Senior Engineer. Table 1.6 shows the breakdown of transects that underwent coastal analysis during Map Modernization or received redelineation.

Table 1.6 – Transects

County	*Revised 2009 Transects*	*Non-revised Transects for Redelineation*	Total Transects
Cumberland	*125*	*28*	153
York	*84*	*55*	139

Standards: All Independent QA/QC work will be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, STARR shall make available to FEMA the following products in accordance with the schedule outlined in Section 5 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- Draft digital work maps, one set of hardcopies per community, showing the 1-percent-annual-chance floodplain boundaries, BFEs, and Limit of Moderate Wave Action (LIMWA);

- Digital wave envelope profiles for each transect representing the 1-percent-annual-chance stillwater elevation including setup wave crest or runup elevations, location of the heel of the PFD, and ground profile conditions including eroded dune profile;
- Digital versions of draft text for inclusion in the FIS report;
- Written summary of the analysis methodologies;
- Digital coastal modeling (input and output files);
- Digital versions of any other supporting computations;
- All backup data used in the analyses;
- Coastal Hydrology Database or Data Delivery consistent with the G&S;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan; and
- If paper documentation is required by State Law for Professional certifications, *STARR will submit the paper in addition to a scanned version of the paper for the digital record. STARR will coordinate with the State of Maine to verify reporting requirements for Maine.*

In addition, STARR shall submit a coastal TSDN with all backup data, description of methodology, and input and output files used in the analyses and mapping as discussed in the G&S.

Perform Independent QA/QC: Coastal Analysis

Responsible Mapping Partner: STARR

Scope: There are two times when the coastal flood hazard analysis will undergo an Independent QA/QC. The first is at the completion of the wave transformation modeling. This effort will determine the accuracy of the wave model in transforming waves into the nearshore zone. The second Independent QA/QC will occur at the completion of the detailed coastal flood hazard analysis.

Standards: All Independent QA/QC work will be performed in accordance with the standards specified in Section 5 - Standards.

Perform Floodplain Mapping

Responsible Mapping Partner: STARR

Scope: For areas where no updated analysis was performed, STARR shall utilize floodplain mapping linework which was developed as part of the Map Modernization efforts in York and Cumberland Counties, ME. As necessary STARR will adjust the 1 percent-annual-chance floodplain boundaries and any other applicable elements to match new base map data acquired under Acquire Base Map Data. For areas adjacent to updated coastal analysis, STARR will resolve tie-ins and provide to the FEMA Regional office for review.

In areas where updated coastal analysis is performed, STARR shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries, the Limit of Moderate Wave Action (LiMWA) and any other applicable elements for the flooding sources for which coastal analysis were performed. STARR shall

incorporate all revised coastal modeling and shall use the topographic data acquired under Develop Topographic Data to delineate the floodplain boundaries on a digital work map *and into the DFIRMs.*

Table 1.7 shows the shoreline miles and total DFIRM panels affected by the new coastal analysis.

Table 1.7 – DFIRM panels affected by the new coastal analysis

Study Area	Shoreline Miles	DFIRM Panels/Communities Affected	Non-revised DFIRM panels	Non-revised Communities
Cumberland	*372*	*110/13*	*205*	*16*
York	*131*	*75/10*	*180*	*19*

STARR will *analyze* all effective Letters of Map Change (LOMCs) for all affected communities on the DFIRM *for appropriateness of incorporating or superseding* and provide to the appropriate PTS the required submittals for incorporation into the National Flood Hazard Layer (NFHL). Also, STARR will address all concerns or questions regarding Floodplain Mapping that are raised during the independent QA/QC review.

STARR will capture flood hazard engineering and/or mapping data quality issues encountered during this activity in the CNMS data model for the area of interest. These issues will be entered as "Requests" or "Needs" in the CNMS data model based on the nature of the deficiency encountered. Detailed information on performing this task can be found in the relevant standards specified in Section 5 - Standards.

STARR will provide the data to FEMA, at the time of DFIRM data submission, to update the Mid-Term Levee Inventory (MLI) *if levees are present.*

During FEMA's Map Modernization Program, the communities of Saco, Wells, and York in York County and Brunswick, Falmouth, Freeport, Long Island, and Yarmouth in Cumberland County did not receive new updated coastal flood hazard studies. Instead, these communities were redelineated using the November 2006 LiDAR data set. Included in this Task Order 08, STARR will evaluate these communities using a detailed coastal flood hazard study. This additional activity results in remapping approximately 168 (128 miles in Cumberland Co. and 40 miles in York Co.) miles of shoreline.

Standards: All Floodplain Mapping work shall be performed in accordance with the standards specified in Section 5 - Standards. Mapping quality standards must be consistent with PM 38, dated October 17, *2007and all subsequent updates. Impacts to cost and/or scheduled completion for changes to completed or ongoing Floodplain Mapping work as the result of subsequent updates will be brought to the Region's attention for resolution prior to implementation* . STARR will perform self-certification audits for the Floodplain Boundary Standards, as described in PM 38 and all subsequent revisions, for all flood hazard areas.

STARR will complete all activities pertaining to levees in accordance with the *G&S, all levee PMs and FEMAHQ guidance.*

Deliverables: In accordance with the G&S, and upon completion of floodplain mapping for all flooding sources in this project, STARR shall make the following products available to FEMA by uploading the digital data to the MIP so for the independent QA/QC review in accordance with the schedule outlined in Section 6 – Schedule.

- A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data;
- Additionally, support documentation and Certification of Work shall be submitted according to Appendix M. Where Technical Support Data Notebook (TSDN) format is used, such shall be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal. The mapping for the remaining flooding sources including any non-revised digital panels and all merged revised and non-revised floodplain mapping data is to be submitted for the Independent QA/QC review at the completion of this activity;
- Digital work map showing the Coastal High Hazard Area (V zone) delineated along York and Cumberland Counties shorelines, transect locations, 1- and 0.2-percent-annual-chance floodplain boundary delineations, *LiMWA, BFEs,* flood insurance risk zone designation labels, gutters, PFD, and all applicable base map features;
- Draft DFIRM database prepared in accordance with the requirements in G&S;
- Digital versions of input and output for any computer programs that were used consistent with the DCS–in the G&S (see draft language and coordinate with the Region regarding its appropriate usage);
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan;
- Any backup or supplemental information including supporting calculations and assumptions used in the mapping required for the independent QA/QC review of Coastal Analysis and Floodplain Mapping consistent with the DCS–in the G&S;
- An explanation for the use of existing topography for the studied reaches, if appropriate;
- Written summary of the analysis methodologies;
- Digital versions of draft FIS report, Floodway Data Tables and updated profiles including all profiles and tables converted to the appropriate datum, as well as any other necessary items for the finalization of the preliminary FIS;
- Any automated GIS-based models which are applied, all input data, output data, intermediate data processing products, and GIS data layers shall be submitted consistent with the DCS–in the G&S; and
- If paper documentation is required by State Law for Professional certifications, STARR will submit the paper in addition to a scanned version of the paper for the digital record. STARR will coordinate with the State of Maine to verify reporting requirements for Maine.

Perform Independent QA/QC: Floodplain Mapping

Responsible Mapping Partner: STARR

STARR will perform impartial review of the floodplain mapping to ensure that the results of the analyses performed are accurately represented, the Redelineation of existing data on new, *more precise* topography is appropriate, and to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRMs and FBFMs for the unrevised areas that are mapped. This work will include, at a minimum, the activities listed below.

- Review the *transects and cross sections* for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain boundaries as shown on the work maps to ensure the data matches the Flood Profiles.
- For non-revised floodplain areas, the 1- and 0.2-percent-annual-chance floodplain boundaries agree with the floodplain boundaries shown on the *effective* FIRM, the contour lines, other topographic information, and planimetric information shown on the DFIRM base.
- Road and floodplain relationships are maintained for all unrevised areas.
- Review the flood insurance risk zones as shown on the work maps to ensure the data are labeled properly.
- Review the DFIRM mapping files to ensure the data were prepared in accordance with the requirements in G&S.
- Review the metadata files to ensure the data includes all required information shown in the NFIP Metadata Profiles Specifications.
- Review that effective Letters of Map Change (LOMCs) for all affected communities on the DFIRM were accounted for.

Standards: All Independent QA/QC work will be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, STARR will make the following products available to FEMA by uploading the digital data to MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review;
- An annotated work map with all questions and/or concerns indicated, if necessary; and
- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

Develop DFIRM Database

Responsible Mapping Partner: STARR

Scope: STARR will prepare the database in accordance with G&S, for upload to the MIP. STARR is responsible for confirming and/or obtaining any revised or updated guidance from the *Region, HQ, or RSC* lead. STARR will be preparing the database for this project in the standard format. The database shall be produced in accordance with the G&S.

STARR will utilize the DFIRM databases for York and Cumberland Counties, ME which were created during the Map Modernization activities. As necessary, STARR will modify these databases to address updates to the mapping performed under this activity. STARR will resolve any problems that are identified during development of the *updated* DFIRM Database.

Standards: All DFIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with G&S, STARR will make the following products available to FEMA by uploading the digital data to the MIP. STARR is responsible for confirming and/or obtaining any revised or updated guidance from the *Region, HQ, or RSC lead.* Additionally, the Technical Support Data Notebook format described in G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- DFIRM database files prepared in accordance with the requirements in G&S and in the required format(s); and
- A metadata file complying with the FEMA NFIP Metadata Profile Specifications.

Develop Non-Regulatory Products

Responsible Mapping Partner: STARR

Scope: STARR will develop a suite of non-regulatory products for York and Cumberland Counties, ME based on the updated flood hazard analysis. Provided below is a description of the various types of non-regulatory products proposed.

Flood Risk Products: The standard non-regulatory products that STARR will create as a part of this activity include:

Flood Risk Products serve as the delivery mechanisms for the Flood Risk Datasets and information developed within a flood risk study. Typically these Flood Risk Datasets include but are not limited to:

- Changes Since Last Map – Since York and Cumberland Counties, ME were not updated during Map Modernization, digital data does not exist to create Changes Since Last FIRM products. Further since the existing data from the Map Modernization activities and the updated Risk MAP study for inland areas will be a digital conversion, there will be limited value to creating a comparative product. STARR recommends generating a product for the coastal restudy areas which compares the Preliminary issuance DFIRM panels created during Map Modernization and the updated coastal analysis for this activity *prior to initiation of the appeal period.* This dataset will be shared during Proposed NFIP Map Changes and Impacts *for the 75 coastal panels and the 2 Mousam panels. No previous effective maps exist in Berwick.*
- Depth & Analysis Grids – These grids will be prepared for those areas containing updated coastal and riverine analysis. This would include portions of the Mousam River and updated studies in the Town of Berwick (both USGS leverage studies during Map Modernization). The grids will be presented at the Flood Risk Review Meeting *for the revised 110 coastal DFIRMs in Cumberland Co. and 95 DFIRMs for York County (75 coastal, 18 Berwick riverine study and 2 Mousam riverine study).*

- Flood Risk Assessment data – result of HAZUS Level 1 study (previously developed) will be presented at the Flood Risk Review Meeting *for entire Countywide studies.*
- Areas of Mitigation Interest – *STARR understands that a CTP will be responsible for performing Discovery in Cumberland and York counties. STARR assumes that the Areas of Mitigation Interest (in GIS format) will be captured during the Discovery process. STARR will coordinate with the CTP responsible for the discovery in these counties to obtain the Areas of Mitigation Interest and overlay this data on the maps showing the HAZUS Level 1 analysis for entire Countywide studies. STARR proposes to provide the PDFs of these maps to the communities, the State and FEMA. STARR has not included printing costs for these panels in the ODCs.* The results will be included in the Flood Risk Report.
- Wave Height Grids – STARR will develop wave height grids based on the updated coastal analysis. The grids will be presented at the Flood Risk Review Meeting.
- Coastal Hazard Identification Map – STARR will prepare figures which identify the dominant factor (overland wave propagation, wave runup, Primary Frontal Dunes) which defines the coastal high hazard areas. These maps will be presented at the Flood Risk Review Meeting.

These products will be delivered to the communities as part of a Flood Risk Database which will contain a Flood Risk Report and Flood Risk Map for each county. *STARR will prepare a Flood Risk Report for all communities in each county. For those communities not receiving updated analysis the Flood Risk Report will reflect Areas of Mitigation Interest (from the Discovery Meeting) and HAZUS level 1 study.*

Quality Control and Quality Assurance: STARR is responsible for the implementation of an independent Quality Assurance/Quality Control (QA/QC) plan for all assigned activities. STARR will submit a Summary Report that describes and provides the results of all automated or manual QA/QC review steps. The report should include the process for all assigned activities.

Standards: All non-regulatory products will be developed in accordance with the standard specific in Section 5 – Standards. Additionally, non-regulatory Flood Risk Products shall be developed for study areas based upon the latest guidance available including the following Procedure Memorandums and appendices:

- PM 57: Guidance for Fiscal Year 2010 Contracting;
- PM 58: Guidance for Acquisition of Flood Risk Data and Products in FY-2010;
- PM 59: Guidance for Implementation of Watershed-Based Studies;
- PM 60: Guidance for Development of Flood Risk Assessment Data and Analysis; and
- G&S Appendix N & O*. STARR is responsible for confirming and/or obtaining any revised or updated guidance from the *Region, HQ, or RSC* lead.

**Appendices still in draft format.*

Deliverables: Deliverables should be submitted through the MIP or with coordination of the Regional Service Center (RSC). STARR is responsible for confirming and/or obtaining any revised or updated guidance from the *Region, HQ, or RSC* lead.

Produce Preliminary Map Products

Responsible Mapping Partner: STARR

Scope: STARR will apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Floodplain Mapping. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user).

To the extent possible, STARR will leverage the Preliminary Map products developed under the Map Modernization activity. This would include *revising the* existing Summary of Map Actions (SOMA) and *updating the FIS report accordingly*. Table 1.8 summarizes the number of DFIRM panel per county.

Table 1.8 – DFIRM panels affected by the new coastal analysis

Study Area	DFIRM Panels Affected	Non-revised DFIRM panels	DFIRM Panels for PPP
Cumberland	*110*	*205*	315
York	*75*	*180*	255

During FEMA's Map Modernization Program, the communities of Saco, Wells, and York in York County and Brunswick, Falmouth, Freeport, Long Island, and Yarmouth in Cumberland County did not receive new updated coastal flood hazard studies. Instead, these communities were redelineated using the November 2006 LiDAR data set. Included in this Task Order 08, STARR will evaluate these communities using a detailed coastal flood hazard study. This additional activity results in full revision of 51 DFIRM panels (34 in Cumberland Co and 17 in York County).

Preliminary Summary of Map Actions (SOMA) Preparation: STARR will *prepare Preliminary* SOMAs for all affected communities to reflect *all identified* LOMCs which have been issued. The SOMA shall *evaluate all identified LOMCs and categorize them appropriately (Category 1 -4) based on the DFIRM.*

Standards: All DFIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards. All work must pass the automated and visual "National QA/QC" reviews prior to the distribution of the preliminary copies of the DFIRM and FIS report and the Preliminary SOMA. Perform appropriate QR activities(s).

Deliverables: In accordance with the G&S, STARR shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Preliminary DFIRM database or revised Preliminary DFIRM database prepared in accordance with the requirements in G&S;
- FIS Report and the Preliminary SOMA prepared using the SOMA Tool on the MIP;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;

- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in approved QA/QC Plan;
- Passing Quality Review report;
- QUALITY REVIEW 2: Auto Validation of Preliminary DFIRM Database;
- QUALITY REVIEW 3: Visual Review of Preliminary Map Panels and FIS;
- QUALITY REVIEW 4: Validate BFE Notice and CEO Letters; Publish Proposed Base Flood Elevations (BFEs) in Federal Register; and
- CNMS Regional File Geodatabase updated to reflect changes to the existing inventory in study extents and attributes as of Preliminary Issuance. Updates to include, but are not limited to, identification of streams scoped for new study or restudy, identification of stream reaches for which flood risk products were developed, resolution of requests addressed by scope of study, identification of additional requests identified during Scoping or production, and requests not addressed by the proposed scope of study. Full instructions and requirements for updating the CNMS Regional File Geodatabase can be found in the document "NVUE: Calculation Guidance under Risk MAP", a part of the CNMS User's Guidance Package. The updated CNMS Regional File Geodatabase will be delivered to the respective FEMA Region or its designee within 15 days of completion of preliminary issuance. All CNMS data collection and population activities will be performed in accordance with the standards and guidance presented in Section 5-Standards.

Perform Independent QA/QC: Produce Preliminary Map Products

Responsible Mapping Partner: STARR

Scope: Upon completion of the floodplain mapping activities, STARR will perform an impartial review of the DFIRM spatial database to determine if it meets current FEMA database specifications. In addition, STARR will review the DFIRM to ensure it meets current FEMA graphic specifications. STARR understands that FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer.

This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and following the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, gutters, cross sections, transects, studied streams and shorelines, mapped political entities, *limits of study,* and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in G&S.
- All map collar information is complete, correct, and follows the requirements specified in G&S.
- Preliminary DFIRM database is in a GIS file and database format as specified in FEMA's G&S, and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's G&S, and conform to those specifications for content and attribution.
- Assess risk assessment products for compliance with Guidance documents.
- Review that Preliminary SOMAs were created *and are accurate* for applicable communities.

Standards: All DFIRM Database Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, STARR will make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 – Schedule.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review;
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary; and
- If the data changed during the QA/QC process, then the updated deliverables from Floodplain Mapping will be resubmitted at this time.

Distribute Preliminary Map Products

Responsible Mapping Partners: STARR

Scope: Preliminary Map Products consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report and the Preliminary SOMA and Risk Assessment products for community officials and the general public review and comment. STARR will perform the activities summarized below.

Preliminary Transmittal Letter Preparation: *STARR shall* prepare letters and transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA. *All letters shall be submitted to the Regional Office for review and hand signature at least three weeks prior to issuance until such time as the Region decides to suspend this review.*

Distribution of Preliminary DFIRM and FIS Report: STARR will distribute the Preliminary copies of the DFIRM and FIS report to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

News Release Preparation: STARR will use the BFEs on the Web tool in accordance with PM 44 to create BFE notices for the coastal studies that result in new or modified BFEs. STARR will prepare the BFE determination letters as well as the news release notifications of BFE changes for all affected communities. STARR will perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. *After the news release notifications have been prepared, STARR will submit the relevant documents to FEMA for review in advance of publication.*

Deliverables: In accordance with the G&S, STARR will make the appropriate deliverables available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

Preliminary transmittal letters shall be prepared and transmitted. These letters and any additional letters requested by FEMA will be prepared by STARR in accordance with the current version of the *FEMA Document Control Procedures Manual* and in conjunction with Guidance provided by the Region and/or its contractor. All correspondence will be provided to the FEMA Regional Office for review and signature at least three weeks prior to issuance.

- A preliminary copy of the DFIRM and FIS report, including all updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the final preparation of the preliminary DFIRM shall be provided as outlined in the approved QA/QC Plan.
- STARR will submit a summary of outreach activities and any changes made in the outreach approach based on the actual implementation.
- Update CNMS Regional File Geodatabase with final documentation identifying stream reaches scoped for study /restudy and any areas with remaining needs and requests as appropriate. Updated File Geodatabase to be delivered to the Region according to timeline defined in the document "NVUE: Calculation Guidance under Risk MAP".

Post-Preliminary Map Production

Scope: Post-Preliminary Map Production includes coordination with FEMA, *the NFIP State Coordinator* and the Community to schedule *two Community Coordination Meetings* per county for review of the Preliminary DFIRM, if required. This activity consists of finalizing the DFIRM and FIS report after the Preliminary copies of the DFIRM and FIS report have been issued to community officials and the public for review and comment. The activities to be performed are summarized below.

Community Coordination Meeting: *Community coordination meetings are required for Cumberland and York* Counties and it is recommended that *they be held within 30 – 45 days* of the issuance of the Preliminary DFIRM. STARR will arrange for and verify that the following activities are completed:

- Notify FEMA that a Preliminary map was released;
- *Coordinate with* FEMA *and notify the NFIP State Coordinator* when *the* Community Coordination Meeting scheduling begins;
- Community Coordination Meeting scheduling must be done in coordination with the Region and State;

- FEMA requires at least 3 week's notice *to communities and other stakeholders* before a meeting for outreach efforts is *held;*
- Establish invitee list *and review with FEMA and NFIP Coordinator*;
- Schedule meeting date and place. STARR must make sure the meeting room is an appropriate size. Also, make sure equipment, such as a projectors, computers, extension cords, tables, etc. are available for the meeting;
- Coordinate project presentation and meeting deliverables with Region prior to meeting, giving appropriate notice. *STARR shall provide invitation letters and presentation materials to FEMA at least 3 weeks before the meeting.*
- Complete and Distribute Meeting Notice/Letter. *Mail official invitations to FEMA* when the documents are mailed to the officials;
- Record Meeting Minutes;
- Identify any/all communities with BFE changes for required appeal period; and
- E-mail scanned sign-in sheets and Meeting Minutes to FEMA *and State* after the meeting.

Initiation of Statutory 90-Day Appeal Period: When required, upon completion of a 30-day community comment period and/or final coordination meeting with the affected communities, FEMA and STARR will arrange for and verify that the following activities are completed in accordance with the current version of the FEMA G&S, appropriate PMs and Document Control Procedures Manual:

- STARR will prepare the appropriate notices (Proposed Rules) that are to be published in the Federal Register. STARR will then deliver those notices to FEMA for publication.
- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- Ensure that news release notifications of BFE changes are published in prominent newspapers with local circulation in accordance with 44 CFR.
- When STARR holds public meetings to present and discuss the results of this Risk MAP Project, FEMA *will* attend the meetings and *participate. STARR shall coordinate scheduling such meetings with the Region.*

Resolution of Appeals and Protests: STARR will review and resolve protests received during the 90-day appeal period. For each protest, the following activities will be conducted as appropriate:

- Initial processing *and written* acknowledgment of submittal;
- Technical review of submittal;
- Preparation of letter(s) requesting additional supporting data;
- Performance of revised analyses;
- Preparation of a draft resolution letter for appeals and protests for signature with FEMA and revised DFIRM and FIS report materials for FEMA review;
- Update CNMS as appropriate when resolving appeals/protests; and
- Update the Risk Assessment Suite as needed for appeal resolutions.

STARR will mail all associated correspondence upon authorization by FEMA.

STARR has *included a total of 40 hours per county for* protests and appeals *review and processing.* STARR will perform a brief review of an appeal and make an initial recommendation to FEMA. *STARR*

will notify the Region when 75% of the budgeted hours have been expended. This proposal does not include a detailed technical review of appeal data or any map updates resulting from an appeal.

Preparation of Special Correspondence: STARR will support FEMA in responding to comments not received within the 90-day appeal period (referred to as "special correspondence") including drafting responses for FEMA review when appropriate and finalizing responses for co-signature. STARR also will mail the final correspondence (and enclosures, if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA.

Revision of FIRM and FIS Report: If necessary, STARR will work together with FEMA to revise the DFIRM and FIS report and will distribute revised Preliminary copies of the DFIRM and FIS report to the CEO and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

Final SOMA Preparation: STARR will prepare Final SOMAs for the affected *communities. STARR* will research for any new LOMC cases *as well as evaluate all LOMCs that may be affected by appeals/revised preliminary maps* in all communities *within each county* and include them in the final SOMA issuance.

Processing of Letter of Final Determination: STARR will work with FEMA *and the State* to establish the effective date for the DFIRM and FIS report, and will prepare Letters of Final Determination (LFDs) for each affected community for FEMA review in coordination with the Region and RSC and in accordance with the FEMA *Document Control Procedures Manual*. FEMA or its designated contractor will mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs. All work must pass the automated and visual "National QA/QC" reviews and review of LFD prior to the distribution of the LFD. *STARR shall confirm LDF dates with the State NFIP Coordinator. LFD letters shall be submitted to the Region three weeks prior to mailing for review. This review will remain in place until such time as the Region decides to suspend it.*

STARR will prepare the appropriate notices (Final Rules) that are to be published in the *Federal Register*. STARR will then deliver those notices to FEMA for publication.

STARR will issue LFDs for all of *Cumberland and York Counties*.

Resilience Meeting: *FEMA will schedule and conduct the* final Risk MAP project outreach and communication *activity* sometime between the LFD and shortly *before the effective date*. Its purpose will be to provide final results of the project to the local stakeholders, develop an action plan so they can use the results of the Risk MAP project to implement risk reduction measures, and obtain feedback on how the project could have been implemented better, including how risk communications could be improved in the future. From a planning perspective, the *resilience* meeting will be used for future scenario planning, updating of local mitigation plans if they were not updated during the Risk MAP project, and setting the stage for a more process-oriented approach for the next update of flood hazard data. A detailed meeting plan that describes the objective, activities, audiences, timeline, and outcomes this meeting will be provided by FEMA. STARR will not participate in the *Resilience* Meeting *or any related activities*.

Processing of Final DFIRM and FIS Report for Printing: STARR will prepare final reproduction materials for the DFIRM and FIS report and provide these materials to the MSC in accordance with appropriate Procedure Memorandums for printing by the Map Service Center. STARR will also prepare

the appropriate paperwork to accompany the DFIRM and FIS report (including Print Processing Worksheet, Printing Requisition Forms, and Community Map Actions Form) and transmittal letters to the community CEOs.

Revalidation Letter Processing: STARR will prepare and distribute letters *to FEMA for review and* signature *prior to issuing* to the community CEOs and floodplain administrators to notify the affected communities about LOMCs for which determinations will remain in effect after the DFIRM and FIS report become effective. *Revalidation letters will be reviewed by the Region until such time as the Region decides to suspend this review. FEMA shall be sent copies of all letters distributed to communities.*

Archiving Data: STARR will ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until transmitted to the FEMA Engineering Study Data Package Facility. In addition, STARR will maintain copies of all data for a period of no less than three years.

Standards: All Post Preliminary DFIRM work will be performed in accordance with the standards specified in Section 5 - Standards. Perform appropriate QR activities(s).

Deliverables: In accordance with the G&S, STARR will make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Documentation that the news releases were published in accordance with FEMA requirements;
- Documentation that the appropriate Federal Register notices (Proposed and Final Rules) were published in accordance with FEMA requirements;
- Draft and final Special Correspondence (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final LFDs (and all associated enclosures, backup data, and other related information) for FEMA review and signature;
- DFIRM digital files and final FIS report materials including all updated data tables and Flood Profiles;
- Provide one hard copy and digital DFIRM products to the *community, the State and the Region;*
- Paperwork for the final DFIRM and FIS report materials;
- Transmittal letters for the printed DFIRM and FIS report;
- LOMC Revalidation Letters, if appropriate;
- Completed, organized, and archived technical and administrative support data;
- Completed, organized, and archived case files and flood elevation dockets; and
- CNMS Regional File Geodatabase updated to reflect changes to the existing inventory in study extents and attributes as of LFD Issuance. Updates to include, but are not limited to,

identification of streams newly studied or restudied, identification of stream reaches for which flood risk products were developed, resolution of requests addressed by scope of study, identification of additional requests identified during Scoping, production, or appeal period, and requests not addressed by the proposed scope of study. Full instructions and requirements for updating the CNMS Regional File Geodatabase can be found in the document "NVUE: Calculation Guidance under Risk MAP", a part of the CNMS User's Guidance Package. The updated CNMS Regional File Geodatabase will be delivered to the respective FEMA Region or its designee within 15 days of LFD issuance. All CNMS data collection and population activities will be performed in accordance with the standards and guidance presented in Section 5-Standards.

SECTION 2—TECHNICAL AND ADMINISTRATIVE SUPPORT DATA SUBMITTAL

The Project Team members for this Risk MAP Project that have responsibilities for activities included in this SOW shall comply with the data submittal requirements summarized below and in appropriate Procedure Memorandums.

All supporting documentation for the activities in this SOW shall be submitted according to Appendix M, and will include a flood elevation determination docket (FEDD) folder. Where Technical Support Data Notebook (TSDN) format is used, such shall be submitted in accordance with Section 2 – Technical and Administrative Support Data Submittal. Table 2.1 Mapping Activities and Applicable TSDN Sections indicates the sections of the TSDN that apply to each mapping activity

If any issues arise that could affect the completion of an activity within the proposed scope or budget, STARR will complete a Change Request (CR) as soon as possible after the issue is identified and submitted to FEMA. The CR is to describe the issue and propose possible resolutions *and the cost impacts.*

Please refer to Procedure Memorandum 62 – TSDN and FEDD File Protocol for Mapping Projects.

Table 2.1- Mapping Activities and Applicable TSDN Sections

Mapping Activities	TSDN Section												
	General Documentation	Change Requests	Telephone Conversation Reports	Meeting Minutes/ Reports	General Correspondence	Hydrologic Analyses	Engineering Analyses	Hydraulic Analyses	Key to Cross-Section Labeling	Key to Transect Labeling	Draft FIS Report	Mapping Information	Miscellaneous Reference Information
Outreach													
Perform Field Survey		X	X	X	X	X		X	X	X			X
Acquire Base Map		X	X	X	X	X		X	X	X	X	X	X
Perform Coastal Analysis		X	X	X	X	X	X	X	X	X	X		X
Perform Independent QA/QC: Coastal Analysis		X	X	X	X	X		X	X	X	X		X
Perform Flood-plain Mapping		X	X	X	X	X		X	X	X		X	X
Perform Independent QA/QC: Flood Plain Mapping		X	X	X	X	X		X	X	X		X	X
Develop DFIRM Database		X	X	X	X							X	X
Develop Non-Regulatory Products		X	X	X	X							X	X
Produce/Distribute Preliminary Map Products		X	X	X	X							X	X
Post-Preliminary Map Production		X	X	X	X							X	X

SECTION 3—PERIOD OF PERFORMANCE

The mapping activities outlined in this SOW will be completed as specified in the Request for Proposal Titled TO08 Coastal Analysis and Mapping for Cumberland and York Counties, ME, Task Order Number: HSFE01-11-J-0008. The period of performance is *36*-months from the start date of *September 1*, 2011. STARR understands that the POP will be adjusted accordingly if the Notice to Proceed and/or funding is not available by *September 1*, 2011.

SECTION 4—FUNDING

FEMA is providing funding to STARR for the completion of this Risk MAP Project.

SECTION 5—STANDARDS

The standards relevant to this SOW are provided in Tables 5.1 Applicable Standards for Project Activities and 5.2 Project Activities and Applicable Portions of FEMA G&S. Information on the correct volume and appendix of the G&S to be referenced for each mapping activity are summarized in Table 5.2 for convenience. However, STARR understands that it is responsible for complying with all appropriate requirements in FEMA's G&S including published draft guidelines and PMs. If standards should change and impact the execution of this study, STARR will coordinate with the FEMA Regional Office and determine an appropriate resolution to address the changes.

Table 5.1- Applicable Standards for Project Activities

Applicable Standards	Activities																	
	Perform Discovery	Outreach	Perform Field Survey	Develop Topographic Data	Perform Independent QA/QC: Topographic Data	Acquire Base Map	Coastal Analysis	Perform Independent QA/QC: Coastal Analysis	Develop Hydrologic Data	Perform Independent QA/QC: Hydrologic Data	Develop Hydraulic Data	Perform Independent QA/QC: Hydraulic Data	Perform Floodplain Mapping (Inc. Redelineation)	Perform Independent QA/QC: Floodplain Mapping	Develop DFIRM Database	Develop Non-Regulatory Products	Produce/Distribute Preliminary Map Products	Post-Preliminary Map Production
Guidelines and Specifications for Flood Hazard Mapping Partners and Procedure Memorandums	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FEMA's Geospatial Data Coordination Policy	X			X		X												
FEMA's Geospatial Data Coordination Implementation Guide	X			X		X												
Engineer Manual 1110-2-1003, *Hydrographic Surveys* (USACE), January 1, 2002	X		X															
"Numerical Models Accepted by FEMA for NFIP Usage," Updated April 2003	X						X	X	X	X	X	X						
NFIP Metadata Profile Specifications	X			X	X								X	X	X	X	X	X
Document Control Procedures Manual	X	X														X		X
44 Code of Federal Regulations Parts 65, 66 and 67	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Data Sharing Agreement																		

Table 5.2- Project Activities and Applicable Portions of FEMA Guidelines and Specifications

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Perform Discovery	Volume 1
	Appendix I
	Discovery Report document
	Risk Map Meetings Guidance
	Interim Guidance for Flood Risk Product Preparation
	Risk MAP Guidance for Incorporating Mitigation Planning Technical Assistance and Training into Flood Risk Projects
	PM 56, 59, 63
	CNMS User's Guide
	CNMS data model
	"NVUE: Calculation Guidance under Risk MAP"
	44 Code of Federal Regulations Part 66 and 67
Outreach	Volume 1
	Appendix I
Perform Field Survey	Volume 1
	Appendices A, B, C, F, and M
Develop Topographic Data and Perform Independent QA/QC: Topographic Data	Volume 1,
	Appendices A and M
	PM 61
Acquire Base Map and Perform Independent QA/QC: Base Map	Volume 1
	Appendices A, K, L, N and O
Develop Hydrologic Data and Perform Independent QA/QC: Hydrologic Data	Volume 1
	Appendices A, C, E, F, G, H, and M
	PM 59
Develop Hydraulic Data and Perform Independent QA/QC: Hydraulic Data	Volume 1
	Appendices A, B, C, E, F, G, H, and M
	PM 34, 43, 51, 52, 53, 59 63

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Perform Coastal Analysis Hazard Analyses and Perform Independent QA/QC: Coastal Analysis	Volume 1
	Appendices A, B, C, D, H, and M
	Coastal Guidelines Updates"
	PM 47
Perform Floodplain Mapping and Perform Independent QA/QC: Floodplain Mapping (including Redelineation/Digitization)	Volume 1
	Appendices C, D, E, F, G, H, K, L, and M
	PM 51, 52, 53 and 56
	CNMS User's Guide
	CNMS data model
	"NVUE: Calculation Guidance under Risk MAP"
Develop DFIRM Database	Volume 1
	Appendices K, L and M
	PM 42, 49, 56
Develop Non-Regulatory Products	Appendices N and O (draft)
	PM 57, 58, 59 and 60
Produce Preliminary Map Products and Perform Independent QA/QC: Produce Preliminary Map Products	Volume 1
	Appendices K, L, and M
	PM 50, 51 and 56
	CNMS User's Guide
	CNMS data model
	"NVUE: Calculation Guidance under Risk MAP"
Distribute Preliminary Map Products and Perform Independent QA/QC: Distribute Preliminary Map Products	Volume 1
	Appendices J, K, L, and M
	PM 56
	CNMS User's Guide
	CNMS data model
	"NVUE: Calculation Guidance under Risk MAP"

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Post-Preliminary Map Production	Volume 1
	Appendices J, K, L, and M
	PM 42, 44, 45, 56, 62
	CNMS User's Guide
	CNMS data model
	"NVUE: Calculation Guidance under Risk MAP"

SECTION 6— SCHEDULE

The activities documented in this SOW will be completed in accordance with Table 6.1 Mapping Activities Schedule, which should drive the schedule within the MIP. If changes to this schedule are required, STARR will coordinate with FEMA *within 10 business days of identification of the required change.*

Table 6.1 Mapping Activities Schedule

Project	Cumberland, ME			York, ME	
	Start	End		Start	End
Acquire Base Map	09/01/2011	01/01/2012		09/01/2011	01/15/2012
Perform Independent QA/QC of Acquire Base Map	12/01/2011	01/01/2012		12/15/2011	01/15/2012
Develop Topographic Data	N/A	N/A		N/A	N/A
Independent QA/QC of Topographic Data	N/A	N/A		N/A	N/A
Perform Field Survey	10/15/2011	02/14/2012		09/01/2011	01/15/2012
Independent QA/QC of Perform Field Survey	01/15/2012	02/14/2012		12/15/2011	01/15/2012
Develop Hydrologic Data	N/A	N/A		N/A	N/A
Perform Independent QA/QC of Hydrologic Analyses	N/A	N/A		N/A	N/A
Perform Coastal Analyses	10/01/2011	07/01/2012		09/01/2011	06/15/2012
Perform Independent QA/QC of Coastal Analyses	04/02/2012	07/01/2012		03/15/2012	06/15/2012
Perform Floodplain Mapping	07/01/2012	10/01/2012		06/15/2012	09/15/2012
Perform Independent QA/QC of Perform Floodplain Mapping	08/15/2012	10/01/2012		08/01/2012	09/15/2012
Develop DFIRM Database	10/01/2012	11/30/2012		09/15/2012	10/30/2012
Perform Independent QA/QC of DFIRM Database	10/30/2012	11/30/2012		10/15/2012	10/30/2012
Produce and Distribute Preliminary Map Products	11/30/2012	04/17/2013		10/30/2012	03/30/2013
Perform Independent QA/QC of Preliminary Map Products	02/14/2013	04/17/2013		01/31/2013	03/30/2013
Post Preliminary Processing	04/18/2013	09/01/2014		03/31/2013	09/01/2014
Timeline of Tasks After Preliminary					
Hold CCO meeting (within 1 month of preliminary)	-	05/17/2013		-	04/29/2013
Publish in Fed Register (Within 60 days of preliminary)	-	06/16/2013		-	05/29/2013
Open Appeal Period (within 70 days of preliminary)	-	06/26/2013		-	06/08/2013
Appeal Period Close (90 days after second publication)	-	09/24/2013		-	09/06/2013
30-day Appeal Resolution Period (if required)	-	10/24/2013		-	10/06/2013
Perform QRs5-6	-	12/23/2013		-	12/05/2013
Issue LFD	-	01/18/2014		-	12/18/2013
County Becomes effective	-	07/17/2014		-	06/16/2014

Proposed Preliminary Date for Cumberland County: 04/17/2013
Proposed Preliminary Date for York County: 03/30/2013
Proposed LFD Date for Cumberland County: 01/18/2014
Proposed LFD Date for York County: 12/18/2014

Once the appeal period has ended, all appeals and protests are resolved and the QRs 5-7 have commenced, STARR will coordinate with the Maine State NFIP office to check which LFD date will be the most suitable for each county. This will allow the State to determine the most suitable date for issuance of the LFD.

STARR will provide to FEMA the MIP workflow tasks with schedule and cost information within 30 days once funds are awarded. STARR will adjust the above schedule if the Notice to Proceed and/or funding is not available by *September 1*, 2011. *A draft Milestone Billing Schedule is included as Appendix B to this Technical Proposal. The final Milestone Billing Schedule will be developed by STARR and FEMA prior to initiation of the contract.*

SECTION 7—CERTIFICATIONS

Data Capture Standards

Acquire Base Map

- A community official or responsible party shall provide written certification that the digital data meet FEMA minimum standards and specifications.
- The responsible Mapping Partner shall provide documentation that the digital base map can be used by FEMA. Please note that uploading base map data to the MIP does not constitute agreement that the digital base map can be used by FEMA. Documentation that the digital base map can be used by FEMA is still required.
- Certifications must be made at the time the intermediate data is submitted. For example, if hydrologic data is submitted, certification will be required at the time it is submitted.

Perform Coastal Analysis and Perform Floodplain Mapping

- A Registered Professional Engineer shall certify hydrologic and hydraulic and coastal analyses and data in accordance with 44 CFR 65.6(f).
- Any levee systems to be accredited will be certified by the levee owner or other appropriate entity in accordance with 44 CFR 65.10.

SECTION 8 – TECHNICAL ASSISTANCE AND RESOURCES

STARR will obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the mapping needs assessment and/or CNMS process from FEMA or the *engineering library and engage the* Regional Project Officer *if necessary.*

STARR understands that general technical and programmatic information can be downloaded from the FEMA website at http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm Specific technical and programmatic support may be provided through FEMA or a Risk MAP contractor; such assistance should be requested through the FEMA Project Officer specified in Section 11 – Points of Contact.

STARR understands that *it will* consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or subcontractors, and GIS-based engineering and modeling training.

STARR shall consult with the Region on any engineering judgments or interpretations of FEMA G&S prior to implementation.

SECTION 9 – REPORTING

Financial Reporting: STARR will provide financial reports to the FEMA Regional Project Officer and Contracting Officer in accordance with the terms of HSFEHQ-09-D-0370 dated March 4, 2009.

Status Reporting: Status reports will be submitted on a monthly basis in accordance with the financial reporting submittals. The Region I Status Report format will be used and submitted to the Region by the 15th of each month. Monthly status reports will also be submitted to the appropriate State NFIP Coordinators after Regional approval.

STARR proposes 2 progress meetings and 2 technical meetings per month. *The Region reserves the right to request more frequent updates if needed.*

STARR *will* meet with FEMA and/or its contractor (including Region I Service Center and Program Manager) up to bi-weekly, or more frequently if needed, to review the progress of the project, in addition to the financial and status submittals. These meetings may alternate between FEMA's Regional Office, STARR office, and conference calls, as necessary.

STARR *will* meet with FEMA and/or its contractor (including Region I Service Center and Program Manager) on a *bi-weekly* basis, or more frequently if needed, to review the technical aspects of the project and seek guidance on resolutions to complex technical issues *and areas where engineering judgment will be used. These meetings will be held at the FEMA Region I office with participation to include the FEMA Project Manager, the STARR Task Order Manager, and the STARR Project Manager.*

Earned Value Reporting:

Earned Value reporting involves the reporting of cost, schedule, and performance (physical percent complete) in the MIP by STARR.

Once the baseline has been established in the MIP, STARR will input the performance and actual cost to date for each contracted task for each project. This will be completed *at a minimum of every thirty days by the last business day of the month.* When a task is completed, STARR will enter 100 percent complete, enter the actual completion cost, and the actual completion date within the Manage Data Development, Manage Preliminary Map Production, or Manage Post Preliminary Processing as applicable.

STARR understands that the Project Officer, as needed, may request additional information on status on an ad hoc basis.

Throughout the project, all members of the Project Team will coordinate, as necessary, to ensure the products meet the technical and format specifications required and contain accurate, up-to-date information. Coordination activities may include:

- Bi-weekly Meetings, teleconferences, and video conferences with FEMA and other Project Team members;
- Telephone conversations with FEMA and other Project Team members on a scheduled basis and an ad hoc basis, as required;
- Updates to the MIP and other FEMA status information systems in accordance with requirements in Volumes 1 and 3 of G&S;
- E-mail, facsimile transmissions, and letters, as required; and
- *Memos documenting Regional clarification of the G&S, approval or resolution of proposed engineering judgments to be applied, or other project resolutions.*

SECTION 10— POINTS OF CONTACT *& SUBCONSULTANTS*

Points of Contact

The points of contact for this Risk MAP Project are Kerry Bogdan, FEMA Regional Project Monitor, Dahlia Kasperski, FEMA Contracting Officer Representative, *Joseph E. Garceau, STARR Region I Lead* and Buvana Ramaswamy, STARR Task Order Manager.

Subconsultants

Green International Affiliates, Inc. will provide field surveying and related services to STARR on this Risk MAP project.

Performance Requirements Summary (PRS) and Quality Assurance Surveillance Plan (QASP)

This Fixed Price Award Fee (FPAF) Task Order Award Fee will be based on the following two metrics and administered in accordance with the Award Fee Plan contained in the master Contract:

- *Metric 1: Schedule*
- *Metric 2: Quality*

The award fee percentage for all FPAF task orders will be accounted for as part of each Regional Task Order. Award Fee determination will be conducted at the FEMA Headquarters level for the FPAF task orders grouped by the FY in which they are awarded and by PTS. The PTS contractors will provide a self-assessment of its respective performance to the government in accordance with the Award Fee Plan. The award fee evaluation periods for this task order will be quarterly following the completion of the Integrated Baseline Review. The Award Fee Pool will also be established following completion of the IBR. The quarters follow the quarterly award fee schedule for the Standard Operations Task Order which ends on the following calendar dates: February 28, May 31, August 31, and November 30.

The overall Award Fee determined by the Award Fee Review Board (AFRB) will be based on the findings for each metric and this table as depicted in the FAR:

Award-Fee Adjectival Rating	*Award-Fee Pool Available To Be Earned*	*Description*
Excellent	*91%-100%*	*Contractor has exceeded almost all of the significant award-fee criteria and has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.*
Very Good	*76%-90%*	*Contractor has exceeded many of the significant award-fee criteria and has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.*
Good	*51%-75%*	*Contractor has exceeded some of the significant award-fee criteria and has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.*
Satisfactory	*No Greater Than 50%*	*Contractor has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.*
Unsatisfactory	*0%*	*Contractor has failed to meet overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.*

Metric 1: Schedule

This metric will be based on a measure of Schedule Performance Index (SPI) of PTS contracted studies as reported by the Contractor's internal earned value management system (EVMS). FEMA agrees that requests to update baseline schedules will be reviewed and, if approved, the schedule will be revised within 7 calendar days of requests from the PTS Contractor. The measurement will be taken on the last business day of the evaluation period and reported to the government in accordance with the award fee plan.

Standards for Unsatisfactory, Satisfactory, Good, Very Good, and Excellent performance will be:

Award-Fee Adjectival Rating	*Award-Fee Pool Available To Be Earned*	*Description*
Excellent	*91%-100%*	*An SPI of greater than 0.95 and up to 0.96 or greater rates as excellent.*
Very Good	*76%-90%*	*An SPI of greater than 0.94 and up to and including 0.95 rates as very good.*
Good	*51%-75%*	*An SPI of greater than 0.92 and up to and including 0.94 rates as good.*
Satisfactory	*No Greater Than 50%*	*An SPI of 0.92 rates as satisfactory.*
Unsatisfactory	*0%*	*An SPI of less than 0.92 rates as unsatisfactory.*

The award fee will be pro-rated accordingly.

Metric 2: Quality

This metric will be based on a qualitative assessment by FEMA staff of the contractor's quality. If the Regional Branch Chief or HQ project manager determines there is a quality deficiency in a contractor deliverable, he/she will notify the contractor's quality manager and program manager. A quality deficiency is characterized as a critical project level error that would lead to the deliverable not being usable or not in accordance with the Guidelines and Specifications for Flood Hazard Mapping Partners in affect when the task order is awarded. The Regional Branch Chief or project manager for HQ FPAF task orders will attempt to resolve the issue locally before elevating to the COR or FEMA HQs' management . The contractor will be provided with an adequate time (at least fourteen calendar days) to correct the deficiency or present a plan to correct the deficiency. If the contractor does not correct the quality deficiency or provide a plan to correct the deficiency within an adequate time the Region Branch Chief or to the HQ project manager for FPAF HQ task orders will forward a deficiency report to the PTS contractor's Contract Officer's Representative (COR). The COR will validate that a quality deficiency occurred. The COR will notify the PTS Program Manager of the submitted deficiency report and provide a copy to the PTS Program Manager. The COR will maintain a file of the deficiency reports submitted during the assessment report.

Standards for Unsatisfactory, Satisfactory, Good, Very Good, and Excellent performance will be:

Award-Fee Adjectival Rating	*Award-Fee Pool Available To Be Earned*	*Description*
Excellent	*91%-100%*	*A rating of excellent signifies zero quality deficiency reports.*
Very Good	*76%-90%*	*A rating of very good signifies one quality deficiency report.*
Good	*51%-75%*	*A rating of good signifies less than four and greater than or equal to two quality deficiency reports.*
Satisfactory	*No Greater Than 50%*	*A rating of satisfactory signifies four quality deficiency reports.*
Unsatisfactory	*0%*	*A rating of unsatisfactory signifies more than four quality deficiency reports.*

The award fee will be pro-rated accordingly.

Weighting of Metrics

Unless noted otherwise in an individual Task Order the weights of the metrics will be:

- *Metric 1: Schedule – 66.7% weight*
- *Metric 2: Quality – 33.3% weight*

These may be changed for an individual task order only with written approval from FEMA HQ.